

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWIN YOUNG CALL

Appeal No. 2006-0340
Application No. 10/089,315

ON BRIEF

Before KIMLIN, GARRIS and WALTZ, Administrative Patent Judges.
KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1, 2, 4, 6, 7, 9-21 and 23-27. Claim 1 is illustrative:

1. A method for protecting submerged or partially submerged marine surfaces from bio-fouling without external electrical power comprising:

directly spraying the surface to be protected with a zinc or zinc based alloy coating produced by an electric arc, twin wire thermal spray process wherein one wire is zinc wire and a second wire is zinc or a zinc alloy to thereby obtain a protective coating of said zinc or zinc based alloy on said surface to provide protection to said surface.

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The examiner relies upon the following references as
evidence of obviousness:

Goldheim	3,097,932	Jul. 16, 1963
Hatfield	4,578,310 ¹	Jul. 19, 1988
Hasui et al. (Hasui)	5,763,015	Jun. 9, 1998

S. Kawahara et al., "The Application of Zn-Al Coatings to Prevent Corrosion of an Iron Boat," Proceedings of the Int'l. Thermal Spray Conference & Exposition 877-80 (ASM Int'l. 1992) (hereinafter referred to as "Zn-Al" article).

Appellant's claimed invention is directed to a method for protecting submerged marine surfaces, such as the hull of a ship, buoys, off-shore oil rigs, piers, etc. The method entails using an electric arc, twin wire thermal spray process for coating the marine surface with zinc or a zinc based alloy. The twin wire thermal spray process utilizes two wires, one of which is zinc while the other is zinc or a zinc alloy. Fouling or bio-fouling in the marine industry refers to the accumulation of marine animals and plant life on the submerged surface.

Appealed claims 1, 2, 4, 6, 7, 9-21 and 23-27 stand rejected under 35 U.S.C. § 112, first paragraph, description requirement. Claims 1, 2, 4, 6, 7, 9-21, 23, 25 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Zn-Al article

¹ On page 3, section (8) of the Examiner's Answer, the examiner incorrectly lists Patent No. 4,758,310 when referring to the Hatfield reference.

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in view of Hasui. Claims 1, 2, 4, 6, 10, 13-18, 24 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Goldheim in view of Hatfield.

We have thoroughly reviewed the respective positions advanced by appellant and the examiner. In so doing, we concur with appellant that the examiner's § 112, first paragraph rejection is not well-founded. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, although we will not sustain the examiner's § 112 rejection, we will sustain the examiner's § 103 rejections for the reasons set forth in the Answer, which we incorporate herein.

We consider first the examiner's § 112, first paragraph rejection. It is the examiner's position that the claim language defining the twin wire thermal spring process as one where the second wire is zinc or a zinc alloy does not find descriptive support in the original specification, i.e., it is new matter. The examiner explains that the only support in the specification for the electric arc, twin wire spraying is found at page 7, lines 25-31, which states that "the second wire can be zinc or copper, aluminum, tin, nickel or magnesium." Therefore, the

examiner contends that "[n]o teaching or suggestion of the use of a second wire of 'zinc alloy' is provided when performing electric arc, twin wire spraying" (page 4 of Answer, second paragraph, last sentence).

While the examiner is correct that the portion of the specification referring specifically to twin wire spraying does not mention a zinc alloy for the second wire, we agree with appellant that the specification reasonably conveys to one of ordinary skill in the art that the second wire of the process can be a zinc alloy. As pointed out by appellant, the specification, at page 1, lines 10-14, discloses the following:

The invention is a system comprised of metallized coatings and thermal spray procedures that produces a unique protective coating. In particular, the invention consists of preparing and applying zinc and zinc-based alloys. These materials are thermal sprayed with unique metallizing processes and procedures onto surfaces of submerged marine structures.

We agree with appellant that the specification reasonably teaches that the materials that are thermally sprayed are zinc and zinc-based alloys, and, therefore, one of the two wires of the twin wire spraying process can be a zinc-based alloy. As submitted by appellant, the specification passage cited by the examiner simply discloses that the second wire can be zinc or one of the other listed metals. Based on the specification considered as a whole,

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we do not find that one of ordinary skill in the art would interpret the examiner's citation as being exclusive of a zinc-based alloy.

We now turn to the examiner's § 103 rejection over the Zn Al article in view of Hasui. There is no dispute that the article, like appellant, discloses a method of protecting a submerged marine surface by flame spraying a zinc-based alloy coating on the marine surface. The article does not teach that the flame spraying is performed by the electric arc, twin wire spraying of the present claims. However, we concur with the examiner that Hasui evidences the obviousness of employing a twin wire electric arc spraying process for providing a zinc and zinc-based alloy coating on a marine surface. As noted by the examiner, Hasui discloses that one wire can be zinc and the other can be a zinc-based alloy (column 4, lines 5-25). Accordingly, for the reasons set forth at pages 9-11 of the Examiner's Answer, we find that it would have been obvious for one of ordinary skill in the art to employ the twin wire spraying process of Hasui in the process of the cited article for protecting a marine surface from bio-fouling.

Appellant submits that "*Hasui* teaches that to obtain a suitable protective coating on a marine surface, a pretreatment

of the surface is carried out to first form a porous primer layer containing solid particles, see col. 2, lines 32-45" (page 9 of principal brief, third paragraph). However, as pointed out by the examiner, the pretreatment step of Hasui, as well as other method steps disclosed by Hasui, are not excluded from the present claims on appeal. Indeed, the examiner explains that "appellant also provides the steps of washing (which would provide degreasing) and then blasting and then spraying of a zinc alloy coating (see claim 7, for example, of the present application)" (page 17 of Answer, last paragraph).

Appellant also submits that "there is nothing in this article which would suggest that multiple spraying applications, for example, would be superior to a single application" (page 10 of principal brief, last paragraph). First, we note that the independent claims on appeal do not call for multiple spraying applications. Moreover, the examiner properly points out that multiple passes of a spray gun is a well-known technique in the thermal spraying art in order to achieve the desired thickness. Since the article teaches spraying to a desired thickness "it would have been obvious to one of ordinary skill in the art to apply multiple layers to get this desired thickness, with at

least the expectation of achieving a desirably applied coating" (page 19 of Answer, second paragraph).

We are also not persuaded by appellant's argument that there is no teaching in the article "of any specific coating other than the use of a zinc aluminum wire containing 87% zinc and 13% aluminum as set forth on pg. 877 of the article" (page 11 of principal brief, third paragraph). We concur with the examiner, however, that Hasui evidences the obviousness of optimizing the amounts of zinc and aluminum in the coating based on the specific application for the coating (see Hasui, at column 4, lines 15-25). Furthermore, it is well settled that when patentability is predicated upon a change in a condition of the prior art, such as a change in concentration or the like, the change must lead to a new or unexpected result. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the present case, appellant has proffered no objective evidence of unexpected results with respect to the concentration of zinc and aluminum in the applied alloy, or with respect to any claimed feature.

We also agree with the examiner that the collective teachings of Goldheim and Hatfield would have rendered obvious the claimed subject matter to one of ordinary skill in the art.

Goldheim discloses a method of flame spraying a zinc coating on a submerged marine surface, such as a boat hull, to protect the submerged surface from bio-fouling. While Goldheim does not expressly disclose the use of the presently claimed twin wire arc spraying method, Hatfield teaches that it was known in the art to employ twin wire electric arc spraying for applying a coating of zinc. Consequently, we find no error in the examiner's legal conclusion that:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) modify Goldheim to use electric arc twin wire spraying, with both wires of zinc as suggested by Hatfield with an expectation of producing a desirable protected coated article, because Goldheim teaches flame spraying a zinc coating, and Hatfield teaches that when applying zinc coatings, either flame spraying or twin wire arc spraying with both wires of zinc are desirable application methods.

(Page 13 of Answer, second paragraph, first sentence). See also the second and third reasons given by the examiner at page 13 of the Answer. We are not persuaded by appellant's argument that "[t]he purpose of this technology [of Hatfield] is to provide radio frequency shielding of electromagnetic interference" (page 13 of principal brief, third paragraph). We concur with the examiner that Hatfield is analogous art and, therefore, combinable with Goldheim, because Hatfield "is reasonably pertinent to the particular problem with which applicant was

concerned, the spraying of zinc coatings onto a surface" (page 23 of Answer, first paragraph).

Appellant maintains in the Reply Brief that Hasui does not teach forming an alloy coating but "zinc fine particles and aluminum fine particles randomly piled on one another so that they appear to a form zinc-aluminum alloy" (page 4 of Reply Brief, fourth paragraph). However, although Hasui refers to a pseudo alloy, it reasonably follows that since both Hasui and appellant employ the same process of twin wire thermal spray by electric arc, both coatings produced would be of the same basic nature. Also, significantly, none of the present claims on appeal requires a coating of zinc alloy. We note that the appealed claims recite that the second wire is zinc or a zinc alloy.

We note that appellant bases no argument upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the inference of obviousness established by the applied prior art.

We further note that claim 27, which defines the second wire as a zinc/copper alloy, has not been rejected under § 103. Consequently, we remand this application to the examiner to consider rejecting claim 27 under 35 U.S.C. § 103 over the combined teachings of Goldheim, Hatfield and Hasui. Goldheim

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discloses an antifouling alloy that can be made from zinc and copper (see column 1, lines 41-56).

In conclusion, the examiner's § 112, first paragraph rejection is reversed, whereas the examiner's § 103 rejections are affirmed for the reasons set forth in the Answer. Accordingly, the examiner's decision rejecting the appealed claims is affirmed-in-part. The application is remanded to the examiner to consider a rejection of claim 27 under 35 U.S.C. § 103.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

AFFIRMED-IN-PART AND REMANDED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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BRADLEY R. GARRIS)	BOARD OF PATENT
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